

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY



(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 24 NOV 2005

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Applicant's or agent's file reference 157988 HT/kmg		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/NO2004/000260		International filing date (day/month/year) 02.09.2004		Priority date (day/month/year) 03.09.2003
International Patent Classification (IPC) or national classification and IPC H04J3/02, H04Q3/545, H05K7/14, G06F13/40, H04L12/24				
Applicant TELEFONAKTIEBOLAGET LM ERICSSON				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 21 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 04.07.2005		Date of completion of this report 25.11.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Pieper, T Telephone No. +31 70 340-3532 		

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**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/NO2004/000260

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-3, 5-9, 11-105	as originally filed
4, 10, 106	received on 30.07.2005 with letter of 22.07.2005

Claims, Numbers

1-53	received on 02.09.2005 with letter of 26.08.2005
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Drawings, Sheets

1-60	as originally filed
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- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☒ the claims, Nos. 2,5
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/NO2004/000260

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1,3,4,6-53
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1,3,4,6-53
Industrial applicability (IA)	Yes: Claims	1,3,4,6-53
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: EP-A-0 959 405 (NORTEL NETWORKS CORP) 24 November 1999 (1999-11-24)

D2: HIROSHI SUZUKI ET AL: "VERY HIGH-SPEED AND HIGH-CAPACITY .
PACKET SWITCHING FOR BROADBAND ISDN" IEEE JOURNAL ON
SELECTED AREAS IN COMMUNICATIONS, IEEE INC. NEW YORK, US, vol.
6, no. 9, 1 December 1988 (1988-12-01), pages 1556-1564, XP000004700
ISSN: 0733-8716

D3: WO 99/41620 A (SIEMENS AKTIENGESELLSCHAFT; KOEPP, JOERG;
BITTERMANN, HANS; BELGARDT,) 19 August 1999 (1999-08-19)

**2. The present application does not meet the criteria of Article 33(1) PCT, because the
subject-matter of claims 1, 3, 4 and 6-53 does not involve an inventive step in the
sense of Article 33(3) PCT. Claims 2 and 5 were cancelled.**

3. Claim 1 is not inventive

3.1 The document D2 is regarded as being the closest prior art to the subject-matter of
claim 1, and discloses (the references in parentheses applying to this document,
references in ~~strikeout~~ are not disclosed in D2):

3.2 A telecommunication or data communication node (Fig.8, Fig. 9) comprising a
number of plug-in units, a first number of the plug-in units hosting a device processor
(Fig.9, units attached to busses; Fig.10 ; page 1563, r.col., § V. Conclusions , "A
modular structured switching system...."),

3.3 ~~the first number of the plug-in units comprising a first and a second flash memory~~

bank,

- 3.4 and the node further comprises a separate traffic and control system (page 1559 , left col. , § 1 , "Call Control Plane and Data Transfer Plane " ; Fig. 8 "Data bus", "Data loop interfaces DLI"; "control bus", "control loop interfaces CLI" ; page 1561, l. col. , § 2 , "System configuration", page 1561, l. col, last § - r. col. § 1 ; Fig. 9) ,

characterised in that

- 3.5 ~~one of the memory banks is adapted to be in an upgradeable state and the other memory bank is adapted to be in a operable state, where the states are mutually interchangeable,~~
- 3.6 the node comprising ~~redundant~~ traffic buses and the traffic and control system being separated on intra boards (Fig. 9, separated paths of D-LU and C-LU) and inter boards respectively (Fig. 9 , Data-Bus, Control-Bus).

The subject-matter of claim 1 therefore differs from the disclosure of D2 in that:

- 3.7 the first number of the plug-in units comprising a first and a second flash memory bank,
- 3.8 that one of the memory banks is adapted to be in an upgradeable state and the other memory bank is adapted to be in a operable state, where the states are mutually interchangeable,
- 3.9 the traffic busses are redundant.

The problems to be solved by the present invention may therefore be regarded as :

- 3.10 The features listed under 3.7 and 3.8 allow an upgrading of the software, while keeping the node operational and to allow a return to the previous software version.
- 3.11 The feature listed under 3.9 solves the problem of low availability of the node in case

of a failure of the single traffic bus.

3.12 Document D1 (Nortel) discloses

A telecommunications node (Fig. 2, ref. sign 200; col. 1, line 49- col. 2, line 6) , with plug-in units (col. 4, § 16, "master unit ", "slave unit"), hosting a device processor (col. 4 § 16, AC)

With respect to the features of § 3.7 and 3.8 and the problem solved as indicated under 3.10, the document D2 further discloses :

two flash memory banks FEPROM (col. 4, lines 47-50; col. 8, line 32 , "flash banks")

that one of the memory banks is adapted to be in an upgradeable state and the other memory bank is adapted to be in a operable state (D2, col. 8, § 35) , where the states are mutually interchangeable (col. 9, lines 7-9)

3.13 The man skilled in the art searching for the problem as defined in § 3.10 is directed by the teachings of D2 to the subject matter of claim 1, with the exception of the feature of redundant traffic buses. The features defined in § 3.7 and § 3.8 thus do not contribute to an inventive step.

3.14 To also apply this latter feature is obvious to improve the availability of the node and does not contribute to an inventive step. As the features not disclosed in D2 solve two very different problems which are not related to each other, claim 1 appears to be a mere juxtaposition of features in a node as defined when applying the teaching of D1 to D2. No surprising effect is reached by this juxtaposition.

Claim 1 thus lacks an inventive step (Art. 33(3) PCT).

4. Other claims

4.1 The same reasoning applies, mutatis mutandis, to the subject-matter of the

corresponding independent method claim 24 which therefore is also considered not inventive.

- 4.2 Dependent claims 1-23 and 25-53 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, see the document D3 and the corresponding passages cited in the search report.

b. wait for a first signal indicating an activation of the first switch,

c. when the first signal becomes active, the first signal denotes a start of a board removal interval time, τ_2 , and

d. the plug-in unit can be removed during the board removal interval.

Brief Description of the drawings

10 In order to make the invention more readily understandable, the discussion that follows will refer to the accompanying drawings.

Figure 1 shows a simple system illustrating the separation principle,

15 figure 2 shows a simplified view of the passive and active bank,

figure 3 shows temperature management vs. time/temperature

figure 4 shows the Traffic Node system description,

figure 5 Application of the TN in the Lower Radio Access
20 Network,

figure 6 LRAN network and the role of various TRAFFIC NODE sub-networks,

figure 7 O&M environment of Traffic Node,

Numerous advantages due to the temperature management system depicted above are evident;

-the system may operate at a higher temperature, thus implying an increased capacity, and a reduced fan dependency,

-increases the availability of the system due to the separation of control and traffic, as interruption to the control section does not interfere/interrupt the traffic,

-generally an improved temperature management is positive with regard to improved life time, service etc.

Further, the temperature management system according to the present invention may use redundant fans, hence making the only single point of failure the controller board for the fans. A more thorough discussion regarding the temperature management system will be given in a subsequent section posterior to the sections describing other features of general character.

The bifurcated architecture described above is to be found on intraboard level as well as on interboard level, further it is to be found within the memory management of the Traffic node according to the present invention.

Software upgrade - general principle

In principle, one has two banks, one active and one passive (cf. figure 3 and 1), where both are operating with software/hardware versions which are tested and proofed, e.g. called version n. Upgrading from version n to n+1 one will download a version n+1 to the passive bank.

SRDF	System Release Description File
SSL	Secure Socket Layer
STM-1	Synchronous Transport Module -1
SW	Software
TCP	Transport Control Protocol
TDM	Time Division Multiplexing
UDP	User Datagram Protocol
URL	Uniform Resource Locator
XF-EM	XF- Element Manager and LCT
XF-NE	XF Node same as ML-TN

P a t e n t c l a i m s

(Amended 22. July 2005)

1. A telecommunication or data communication node comprising a number of plug-in units, a first number of the
5 plug-in units hosting a device processor, the first number of the plug-in units comprising a first and a second flash memory bank, and the node further comprises a separate traffic and control system,
c h a r a c t e r i s e d i n that one of the memory
10 banks is adapted to be in an upgradeable state and the other memory bank is adapted to be in a operable state, where the states are mutually interchangeable, the node comprising redundant traffic buses and the traffic and control system being separated on intra boards and inter
15 boards respectively.

2 [Cancelled]

3. System according to claim 1,
c h a r a c t e r i s e d i n that the traffic buses are Time Division Multiplex, TDM, buses having redundant
20 switching functions, the Plesio-synchronous Digital Hierarchy, PDH, and Synchronous Digital Hierarchy, SDH, synchronisation buses are redundant and the fan systems are redundant.

4. System according to claim 1,
25 c h a r a c t e r i s e d i n that said telecommunication or data communication node's software consists of the following major component types:

a. basic node software, BNS, that realises the control and management of said node and its Traffic Node Basic

Node Hardware Building Blocks, TN BNH BB, residing on
Application Plug-in Units, APU's,

b. application node processor software, ANS, which is a
control software for the application and for all
software on a Node Processor Unit, NPU,

c. application device processor software is located on
the APU, provided that the APU houses one or more
processors, it interfaces with ANS.

5. [Cancelled]

6 System according to any of the previous claims,
characterised in that a basic node
hardware provides communication buses as part of a
backplane and a power distribution bus between Plug-in
Units.

7. System according to claim 6,
characterised in that the basic node
hardware comprises at least the following buses:

a serial bus for equipment handling and control,
SPI bus,

a multiplexed address/data bus for control and
management in the node, PCI bus,

a traffic bus, TDM bus,

a power distribution bus,

synchronisation buses such as PDH and SDH buses
being a part of the traffic system,

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inter APU communication buses, BPI buses,

Point to point, PtP bus for central switching of
high capacity traffic,

programming bus for programming of field
programmable gate array, FPGAs, in said node.

8. System according to claim 7,
characterised in that the SPI bus is a
Serial Peripheral Interface low speed synchronous serial
interface bus used for equipment handling and control
of:

APU cold and warm resets,

status LEDs and block received signals, BRS,

inventory data such as product number serial
number and asset identifier,

temperature supervision,

power supervision,

board position interconnect, BPI, disable and
enable,

peripheral component interconnect, PCI, fault
handling, and

the TDM bus adapted to implement cross connect
functionality in said telecommunication or data
communication node.

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9. System according to any of the previous claims,
c h a r a c t e r i s e d i n that a management system
of said telecommunication or data communication node is
adapted to utilize data communication network using in-band
5 capacity on transport links.

10 System according to claim 9,
c h a r a c t e r i s e d i n that said data
communication network is an IPv4 based network.

11. System according to claim 10,
10 c h a r a c t e r i s e d i n that Open Shortest Path
First, OSPF, is used as routing protocol for said data
communication network.

12. System according to any of the claims 9-11,
c h a r a c t e r i s e d i n that said
15 telecommunication or data communication node is adapted to
communicate with the following services:

a. Dynamic Host Configuration Protocol, DHCP, for
assignment of IP addresses to equipment on the site-
LAN, e.g. an embedded element manager, EEM,

20 b. Network Time Protocol, NTP, for accurate time keeping

c. up and download for software upgrade and configuration
using File Transfer Protocol, FTP,

d. a Network Element Manager, NEM, using Simple Network
Management Protocol, SNMP, for monitoring and
25 configuring said telecommunication or data
communication node,

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e. .a EEM being a computer that communicates HTML pages containing JavaScript over Hyper-Text Transfer Protocol, HTTP, with the Embedded Element Manager, EEM in said telecommunication or data communication node by means of a web browser.

13. System according to any of the previous claims, characterised in that the management system of said telecommunication or data communication node is further comprising one or more of the following devices:

a. a computer with a web browser adapted to connect to an embedded element manager,

b. a combination of an embedded element manager and a SNMP interface remotely by a traffic node manager,

c. an operator specific Operations Support System or a network management system adapted to be operated remotely.

14. System according to any of the previous claims, characterised in that said telecommunication or data communication node comprises 1 to 20 application plug in units, APU.

15. System according to claim 14, characterised in that every said APU in said telecommunication or data communication node is adapted to be handled by one application.

16. System according to any of the previous claims, characterised in that said

telecommunication or data communication node is a PDH/SDH microwave transport network.

17. System according to claim 16,
c h a r a c t e r i s e d i n utilizing one or more TDM
5 buses and a E1 input in the telecommunication or data
communication node for interface through four principal
blocks:

- a redundant traffic basic node,
- a line protection block,
- 10 • an equipment protection block and
- a crossconnect block.

18. System according to claim 17,
c h a r a c t e r i s e d i n that said traffic basic
node is adapted to divide transmitted data into two
15 identical data streams a first data stream and a second
data stream, both streams being forwarded to a respectively
first and second line protection sub block, equipment
protection block, each being symmetrical sub blocks, the
first sub block is adapted to handle the first data stream,
20 the second sub block being adapted to handle the second
data stream, the first and the second sub block each
comprises a first and a second traffic application plug in
unit and a control application plug in unit.

19. System according to claim 17 and 18,
25 c h a r a c t e r i s e d i n that said first and
second data stream are forwarded to said equipment
protection block, said equipment protection block comprises

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a first and a second sub block and a common block, the first and the second sub block each comprises a traffic application plug in unit, a mux and a port, the common block comprises at least one control application plug-in unit and a node processor unit in reciprocal action with the first and the second sub block of the equipment protection block

20 System according to claim 17 to 19,
c h a r a c t e r i s e d i n that a a respectively
10 first and second cross connect sub block is adapted to receive said first and second data stream, the first sub block comprises two cross connect application plug-in units denoted with a first number and a control block consisting of a node processor unit and a peripheral component
15 interface denoted with the first number, the second sub block comprises two cross connect application plug-in units denoted with a second number different from the first number and a control block consisting of a node processor unit and a peripheral component interface denoted with the
20 second number, said first and second data streams after being processed in said cross connect block are further forwarded to said one or more TDM bus(es).

21 System according to claim 7,
c h a r a c t e r i s e d i n that temperature sensors
25 in a serial peripheral interface building block is adapted for temperature supervision within said telecommunication or data communication node.

22. System according to claim 21,
c h a r a c t e r i s e d i n that the temperature
30 sensors are adapted to measure the temperature on all

boards in said telecommunication or data communication node supporting a two level alarm system:

- a first alarm, indicating high temperature, and
- a second alarm indicating excessive temperature.

5 23. System according to claim 1,
c h a r a c t e r i s e d i n that said
telecommunication or data communication node comprises a
plurality of distributed power sensors sensing a voltage
level on said plug-in units and said boards.

10 24. A method within telecommunication or data communication
node where the telecommunication or data communication node
comprises a number of plug-in units, a first number of the
plug-in units hosting a device processor, the first number
of the plug-in units comprising a first and a second flash
15 memory bank, and the node further comprises a separate
traffic and control system,
c h a r a c t e r i s e d i n the step of upgrading one
of the memory banks and operating the other memory bank,
where the process of upgrading and operation is mutually
20 interchangeable between the memory banks, establishing
redundant traffic buses and separating traffic and control
system on intra boards and inter boards respectively.

25 A method according to claim 24,
c h a r a c t e r i s e d i n that hot
swapping/removing/replacing a plug-in unit comprises the
step of:

- a. pushing or pulling a first switch indicating a plug-in unit removal,

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b. wait for a first signal indicating an activation of the first switch,

c. when the first signal becomes active, denoting a start of a board removal interval time τ_2 , and

5 d. removing the plug-in unit during the board removal interval time.

26. A method according to claim 25,
c h a r a c t e r i s e d i n that replacing said plug-in unit includes the step of removing said plug-in unit
10 during the board removal interval τ_2 and within a second interval, a board replacement interval τ_6 , adding a new plug-in unit to said telecommunication or data communication node.

27. A method according to claim 26,
15 c h a r a c t e r i s e d i n that if the board removal interval time, τ_2 , expires without removal of a plug-in unit and the plug-in unit is an application plug-in unit, taking the plug-in unit will into service and performing an application plug-in warm restart.

20 28. A method according to claim 25 and 26,
c h a r a c t e r i s e d i n that removing a plug-in unit comprising a node processor during the board removal interval τ_2 comprises the steps of:

a. setting the plug in unit comprising the node
25 processor in a passive equivalent state,

b. the plug in unit comprising the node processor is executing a peripheral component interconnect reset.

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29. A method according to claim 28,
c h a r a c t e r i s e d i n t h a t i f t h e b o a r d r e m o v a l
i n t e r v a l τ_2 e x p i r e s w i t h o u t r e m o v a l o f t h e p l u g - i n u n i t ,
t h e p l u g - i n u n i t w i l l p e r f o r m a n o d e p r o c e s s o r c o l d
5 r e s t a r t .

30. A method according to claim 25,
c h a r a c t e r i s e d i n t h a t a b a s i c n o d e
s o f t w a r e a n d a n a p p l i c a t i o n n o d e s o f t w a r e i n t e r a c t s
a c c o r d i n g t o t h e f o l l o w i n g s t e p s d u r i n g
10 r e m o v a l / r e p l a c e m e n t / s w a p p i n g o f p l u g - i n u n i t s :

a. pushing or pulling the first switch indicating a
board removal causing the basic node software to
inform the application node software that a plug-in
unit shall be taken out of service,

15 b. the application node software executes a number of
commands as a response to the information given
from the basic node software,

c. thereafter, when the application node software has
finished the number of commands it will report to
20 the basic node software that the plug-in unit can
be removed,

d. thereafter the basic node software is deallocating
a peripheral component interconnect device drivers
for the plug-in unit and indicates the deallocation
with a visible signal, such as turning on a LED,
25 and

e. the basic node software places the application
plug-in unit in cold reset.

31. A method according to claim 24,
c h a r a c t e r i s e d i n installing temperature
sensors in a serial peripheral interface building block for
temperature supervision within said telecommunication or
5 data communication node and measuring a temperature on all
boards within said telecommunication or data communication
node supporting two levels of temperature alarms.

32 A method according to claim 31,
c h a r a c t e r i s e d i n the step of separating
10 the two levels of temperature alarms, into a first alarm
indicating high temperature, and a second alarm indicating
excessive temperature.

31. [Cancelled]

33 A method according to claim 32,
15 c h a r a c t e r i s e d i n setting an operational
status of a severity level of the temperature alarm on the
plug-in units to a following levels according to crossed
temperature thresholds:

20 a. setting severity to minor if the temperature is above
the high temperature threshold and below the excessive
temperature threshold, or

b. setting severity to critical if the temperature is
above the excessive temperature threshold.

34 A method according to claim 32,
25 c h a r a c t e r i s e d i n that operation of the
node or plug-in units for temperatures following a
temperature cycle measured by said sensors, ranging from a
normal temperature interval to an excessive temperature

interval and back to the normal temperature interval
comprises the steps of:

- a. running the node or plug-in units in normal
operation, when the temperature is below the high
5 temperature threshold,
- b. automatically switching of control functions,
unaltering the traffic functions, and sending an
alarm to a OAM system when the temperature is in
the high temperature interval and rising from the
10 normal temperature interval, control functions are
automatically switched off,
- c. automatically shutting down both control and
traffic related hardware, sending an alarm to the
OAM, this situation equals a cold reset when the
15 temperature is in the excessive area interval
rising from the high temperature interval,
- d. restarting said node without control functions
running, status is sent to the OAM when the
temperature is in the high temperature interval,
20 falling from the excessive temperature interval,
and
- e. returning said node and/or plug-in unit to normal
operation when the temperature is in the normal
temperature interval falling from the high
25 temperature interval.

35. A method according to claim 34,
c h a r a c t e r i s e d i n that step b further
comprises the step of setting application plug-in units to

power save modus which is equal to setting the plug-in unit to a warm reset.

36. A method according to claim 34,
c h a r a c t e r i s e d i n that step e further
5 comprises the step of: restricting the step of return to
normal operation to incidents where the temperature is
below the high temperature threshold for a period longer
than said board removal interval τ_2 .

37. A method according to claim 24,
10 c h a r a c t e r i s e d i n that supervising one or
more cooling fans by monitoring fan status and signalling
the fan status on a serial peripheral interface bus from a
power filter unit.

38. A method according to claim 37,
15 c h a r a c t e r i s e d i n supervising individual
fans and indicating a failure if one fan fails.

39. A method according to claim 24,
c h a r a c t e r i s e d i n that said
telecommunication or data communication node is monitoring
20 correct local power on one or more application plug-in
units.

40. A method according to claim 39,
c h a r a c t e r i s e d i n indicating a power
failure situation by a visual signal such as turning off a
25 power LED or lamp.

41. A method according to claim 39 and 40,
c h a r a c t e r i s e d i n that the power failure
situation further comprises the step of setting said

application plug-in units in an operational state indicating the power failure, such as critical/hardware error.

42. A method according to claim 41.,

5 c h a r a c t e r i s e d i n that reporting said error to an application and thereafter to an embedded element manager.

43. A method according to any of the claims 39 to 40,

10 c h a r a c t e r i s e d i n that leaving the plug-in unit in cold reset until the power failure is terminated.

44. A method according to claim 24,

15 c h a r a c t e r i s e d i n that setting the first and second memory bank in a passive and an active state/modus respectively where the states/modes are mutually interchangeable between the first and second memory bank.

45. A method according to claim 24,

20 c h a r a c t e r i s e d i n that software upgrading the telecommunication or data communication node from a first version n to a second version n+1 comprises the following steps:

a. downloading the second version n+1 to a passive memory bank, and

25 b. writing a pointer to the passive memory bank making the passive memory bank the active one and consequently making the previous active memory bank passive.

46. A method according to claim 44,
characterised in that step a further
comprises the step of executing a test-run on the second
version n+1.

5 47. A method according to claim 24,
characterised in configuring a software
system release with three software modules includes the
step of:

- 10 a. establishing a traffic node basic node software in
a node processor software load module,
- b. establishing an application node software in a node
processor software load module, and
- 15 c. establishing an application device software , such
as application plug-in units with a device
processor.

48. A method according to claim 47,
characterised in software upgrading said
telecommunication or data communication node from one
system software release version, n, to another system
20 software release version n+1.

47 [Cancelled]

49. A method according to claim 24,
characterised in that installation of said
telecommunication or data communication node comprises at
25 least the following major steps:

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- a. equipping an application module magazine with a number of plug-in units where at least one of them is a node processor unit,
- b. turn on the power for said node,
- 5 c. press a board removal switch,
- d. perform a configuration check of the node processor unit,
- e. check if radio link configuration is necessary, if necessary then radio link frequencies have to be
10 configured and/or antenna alignment have to be configured,
- f. executing manual or automatic security and software upgrade set up,
- g. exit the installation modus, and
- 15 h. perform a save of the configuration and enter normal operation for said telecommunication or data communication node.

50. A method according to claim 49,
c h a r a c t e r i s e d i n further at step d
20 deleting the configuration and replace it with factory settings if configuration is present, if configuration is replaced a software upgrade have to be performed,

51. A method according to claim 49,
c h a r a c t e r i s e d i n that the manual set up
25 comprises the following actions

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a. initiating a manual upgrading if a software upgrade is necessary, and displaying the upgrade progress, and

b. displaying the inventory data to an operator.

5 52. A method according to claim 49,
c h a r a c t e r i s e d i n that the automatic set up
comprises the following steps:

a. specifying a configuration file,

b. loading the configuration file and append,

10 c. performing an automatic upgrade if a software upgrade
is necessary and displaying the upgrade progress,

d. displaying at least the inventory data to an operator.

53. A method according to claim 24 and 49,
c h a r a c t e r i s e d i n that repairing a first
15 node processor unit comprises the step of:

a. getting a configuration file from a remote/central
configuration server or from the first node processor
unit,

b. removing the first node processor unit,

20 c. plug-in a new second node processor unit,

d. power up the second node processor unit,

e. pushing or pulling said first switch indicating a
plug-in unit removal

